



Precision Targeting and Identification

Advanced Concept Technology Demonstration

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Precision Targeting Identification (PTI)

• Objective

- Demonstrate potential of Advanced Sensors to increase search area and obtain precise target location and identification
- Demonstrate capability in a counter-narcotic missions
- Capability applicable to other platforms and missions requiring precise target identification

• Key Participants

- Technical Lead: NAWCPAX 4.5.6
- CINC SPONSOR: SOUTHCOM
- USER: JIATF EAST
- Special Forces
- OTHER Federal Agencies

• Schedule

- FY 98: System Definition
- FY 99: Aircraft installation & Testing
- FY 00: Crew training & Operational Data Collections
- FY 01 Operations

• Technology

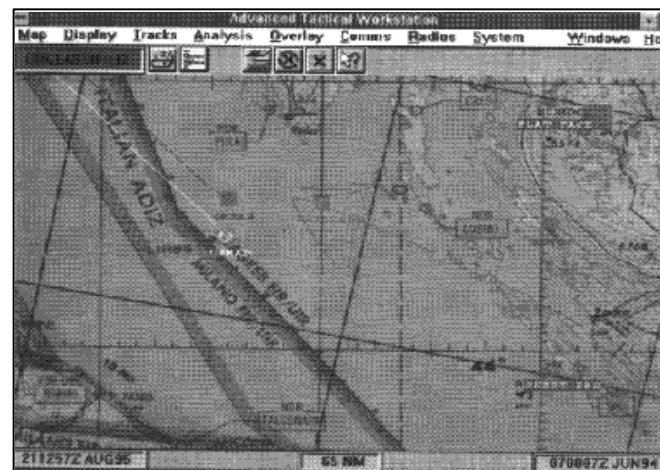
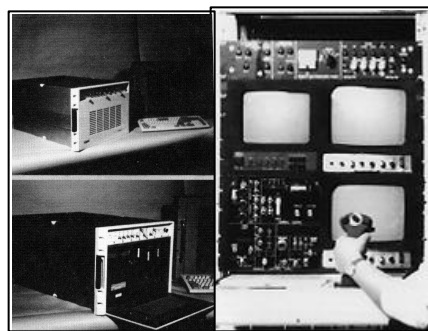
- 3rd Generation MWIR Staring FLIR
- Long range electro-optical system
- Vibration analysis from laser radar
- Electronic Signals Exploitation
- Spectral Sensors for target detection/classification
- C4I Dissemination System





PTI ACTD Equipment

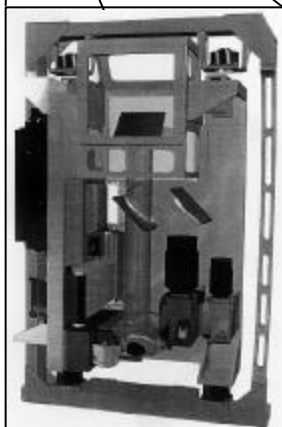
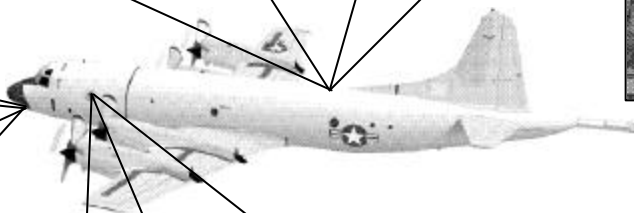
OASIS / Operator Station



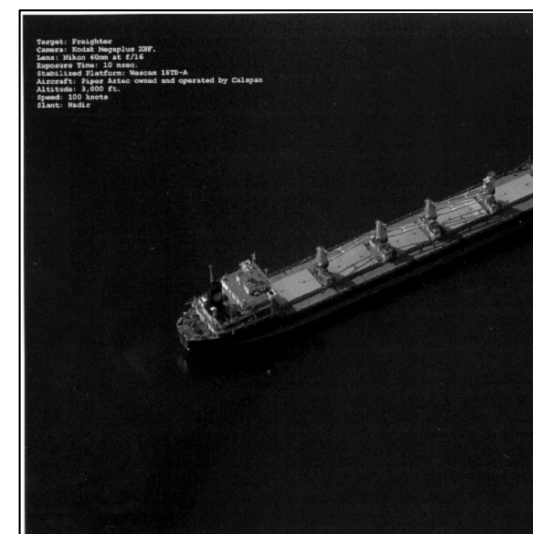
OASIS Tactical Display



**Advanced Stabilized
Turret**



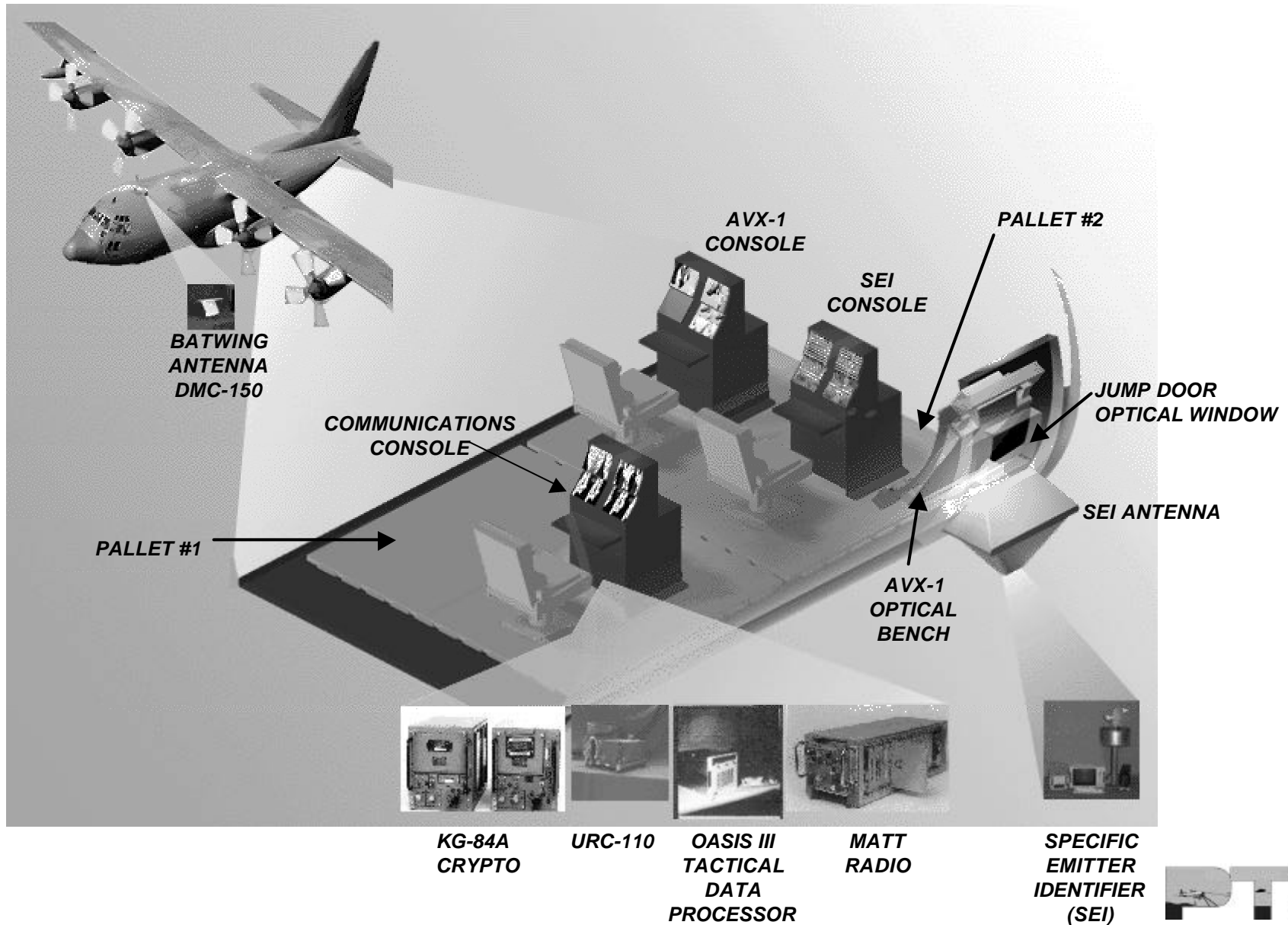
AVX-1 x (Cluster Ranger Variant)



Secondary Imagery



Naval Air Warfare Center Pax River Testbed System Overview



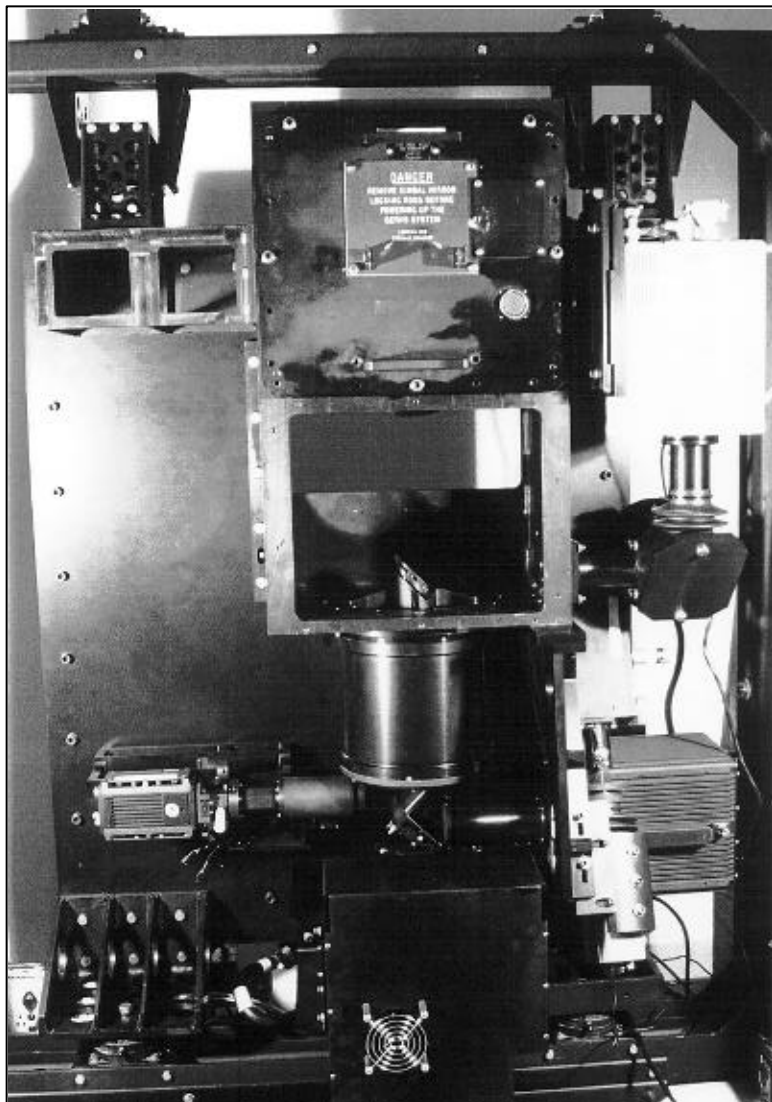


PTI AVX-2 Looking Out C-130 Door

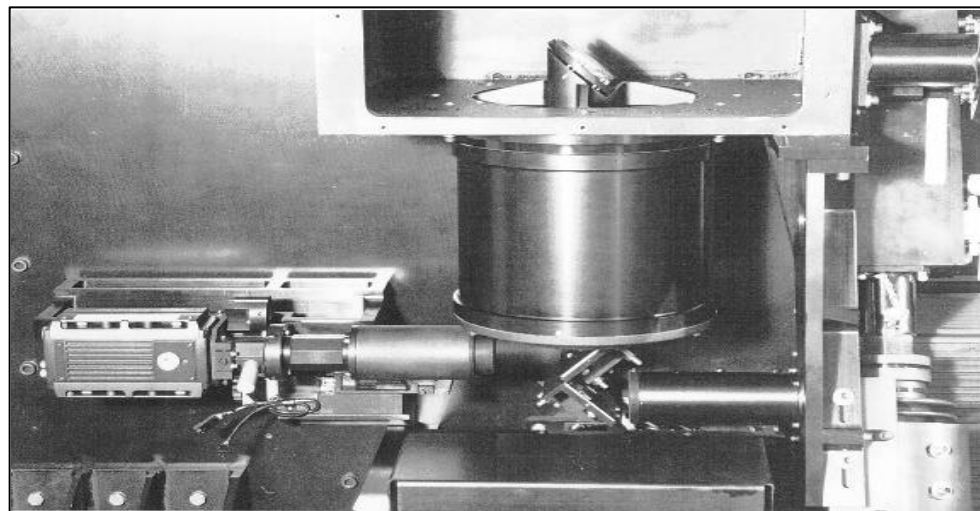




Multi-Band Optical Surveillance System



<u>Optical</u>	<u>Visible</u>	<u>MWIR</u>	<u>LWIR</u>
Spectral Band, μm	0.5-1.0	3.8-4.8	8.0-10.3
Aperture Diameter	7 Inches	7 Inches	7 Inches
<u>Stand-off Imagery</u>	Yes	Yes	Yes
NFOV @ 10 nmi	1 ft. (NIRS 7)	3 ft. (NIRS 5)	6 ft. (NIRS 4)
Image Diagonal (mm)	16.1	12	10.9
MFOV (deg.)	1.04	N/A	1.96
NFOV (deg.)	0.52	0.96	N/A
Focal Length	35/70 Inches	28 Inches	12-6 Inches
F/#	5.0	4.0	1.8
<u>Acquisition Camera</u>	Yes	Yes	No
Focal Length, MFOV/NFOV	3/9	3/6	None



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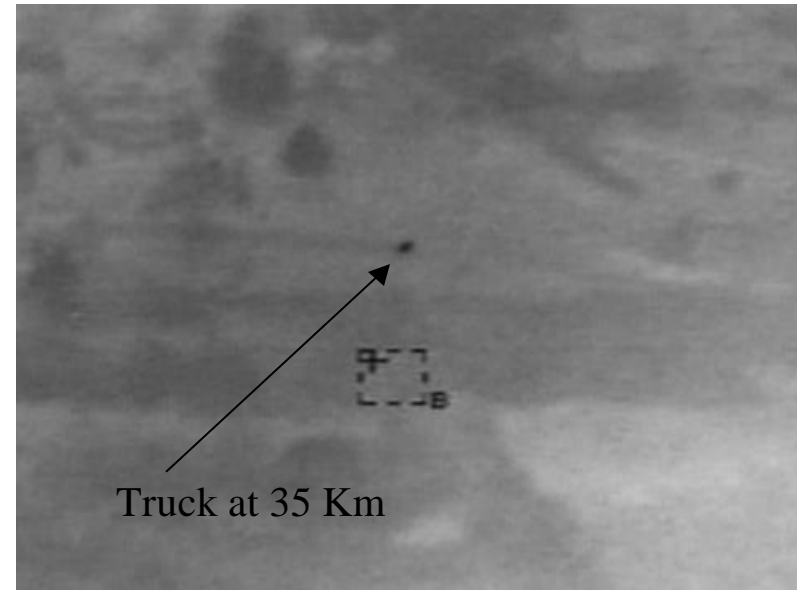




MBOSS MWIR Imagery 20 - 70 Km



Pick-up Truck w/ Cap



Truck at 35 Km



Combatant



Power Plant

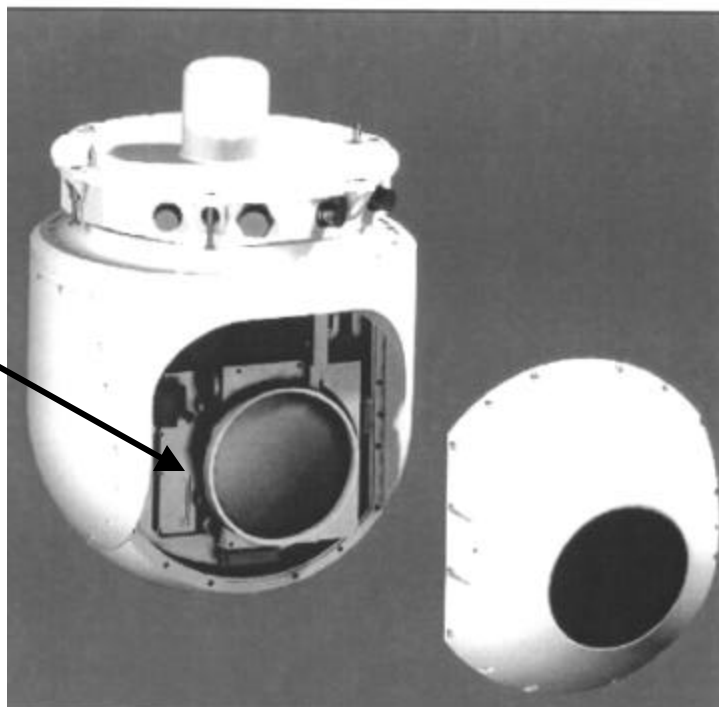


Northrup Grumman ATIS



6" 320 x 240 MCT
With Dither Scan

Spectral Range	3.8 μm - 4.8 μm
Aperture	6 in.
F/#	2.25
Detector Pitch	30 μm
FOV	2°, 8° Dual FOV
IFOV	81 μrad NFOV ~60 μrad w/ μscan
Weight	< 20 lbs. Nominal
Size	11.5" x 8" x 7.5"
Power	28 Watts Nominal



Stabilized Turret

16" Turret

Weight:	96 lbs.
Azimuth:	360° continuous
Elevation:	+30° and -95°
Cross	
Elevation:	+5° and -5°
Slew rate:	> 120°/sec,
Stability:	~20 μrad
Power:	28 VDC





Suspected Drug Trafficking Vessels





Go-Fast Tracking





15KM Wake Detection





Flir Systems Inc

AN/AAQ-22 STAR SAFIRE

- Mil-Qualified
- 3 Axis Stabilized
- 3 FOV MWIR Fully Programmable
- $< 50 \mu\text{Rad}$ Stabilized Turret Including Nadir
- Full Hemispheric Coverage
 - Continuous 360° Azimuth
 - $+30^\circ$, -120° Elevation



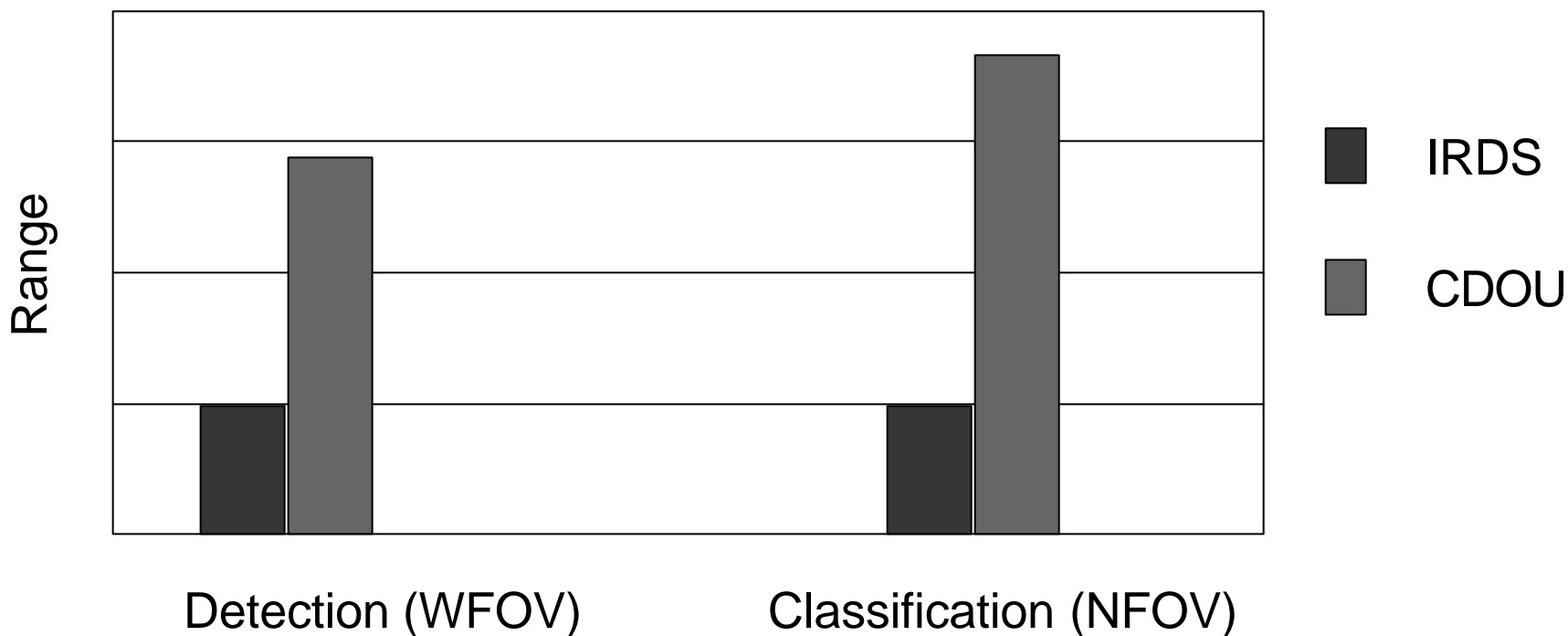
Weight: 92 lbs
Height: 17.5"
Diameter: 15.1"







Measured FLIR Performance 1st Gen vs. 3rd Gen



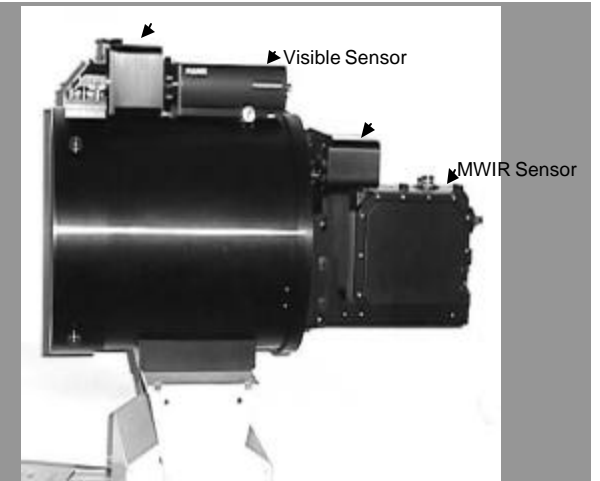
Atmosphere - MODTRAN Tropical Navy Maritime environment, Vis 12 Km
Aircraft Alt - 5 Kft
Target - Patrol Boat, 1.5K delta T





Land-Based Systems Systems

10" Dual Band NAWCPAX (Range 43Km)



23 Km Convoy (Daytime)



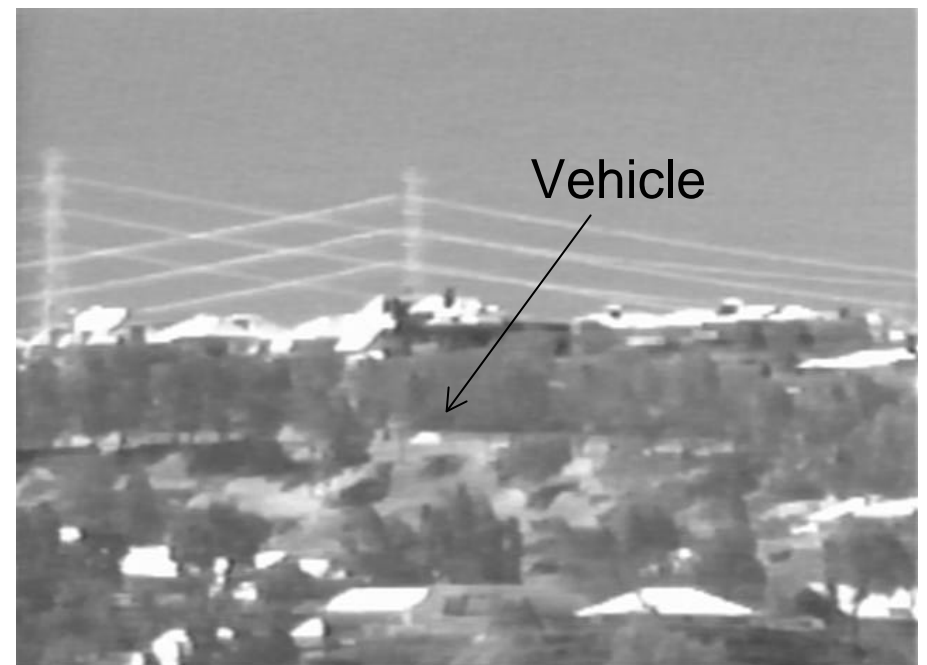
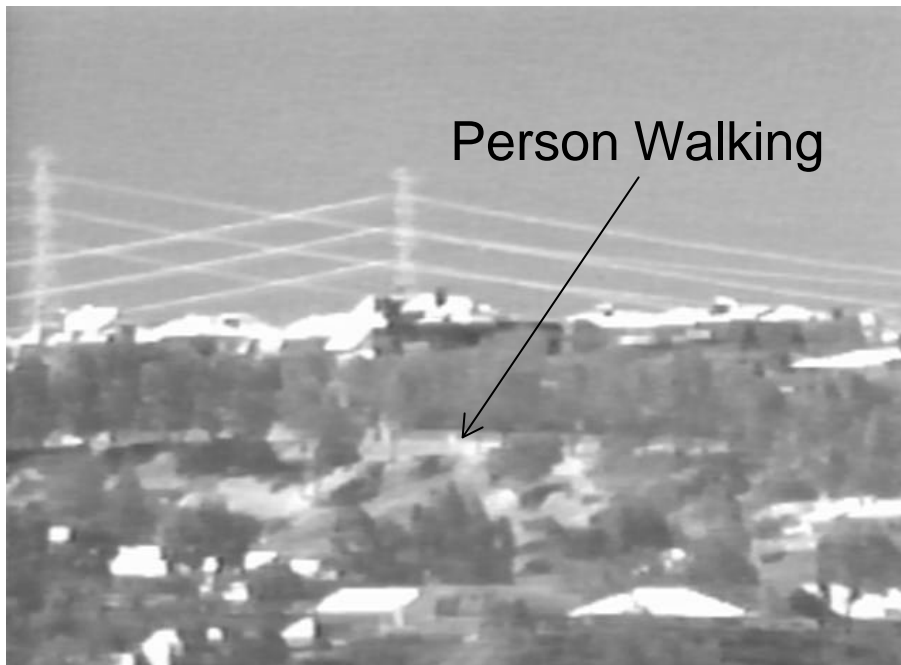


Manportable MWIR Specification

BOEING



Wavelength band	3-5 μ m
Array size	320 x 240
Detector	HgCdTe
Detector Pitch	30 μ m
Sensitivity	0.03°C
Size	8"x 6"x 4"
Weight	2.5 lbs
Power requirement	28VDC





Summary

- US SOUTHCOM is the sponsor for the Precision Targeting Identification ACTD in its AOR for Counterdrug Operations.
- PTI holds excellent promise to satisfy JIATF East Detection & Monitoring Requirements from Aircraft.
- In Tropical Environment 3rd Gen provides significant improvement over 1st Gen FLIRs.
- Long range infrared surveillance for other Counterdrug Missions to more efficiently search, locate, and track suspected vehicles.

